



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,207	03/30/2001	Partha P. Tirumalai	SUN-P5446	6083

25920 7590 01/03/2005

MARTINE PENILLA & GENCARELLA, LLP  
710 LAKEWAY DRIVE  
SUITE 200  
SUNNYVALE, CA 94085

EXAMINER
----------

WOOD, WILLIAM H

ART UNIT	PAPER NUMBER
----------	--------------

2124

DATE MAILED: 01/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/823,207

Applicant(s)

TIRUMALAI ET AL.

Examiner

William H. Wood

Art Unit

2124

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

Claims 1-20 are pending and have been examined.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6 and 8-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Aho et al., "Compilers: Principles, Techniques, and Tools".

#### *Claim 1*

Aho disclosed a method of optimizing at least two target machines (*page 14-15, section "Code Optimization"*), comprising the steps of:

- ♦ abstracting a rule of instruction scheduling for each of said at least two target machines (*page 463*);
- ♦ generating a hypothetical machine based on said rule of instruction scheduling for each of said at least two target machines (*page 12, first paragraph under section "Intermediate Code Generation"*); and
- ♦ targeting said hypothetical machine (*page 463, item 2.*).

Art Unit: 2124

Claim 2

**Aho** disclosed the method of claim 1 wherein a rule of different instruction scheduling for said hypothetical machine is a restrictive set of said rule of instruction scheduling for each of said at least two target machines (*page 20, section "Front and Back Ends", second paragraph; page 463, the necessary set of rules to target the machines*).

Claim 3

**Aho** disclosed the method of claim 1 further including the steps of:  
detecting a conflict between said rule of instruction scheduling for each of said at least two target machines; and resolving said conflict (*page 20, second paragraph; conflicts being when the compiler must choose to follow actual rules for the actual target machine after the optimizing intermediate code step*)

Claim 4

**Aho** disclosed the method of claim 3 wherein said step of resolving said conflict includes a step of selecting a less damaging option for said detected conflict (*page 20, second paragraph; "less damaging" is choosing the rules for the actual machine being targeted*).

Claim 5

**Aho** disclosed the method of claim 3 wherein said detected conflict corresponds to an inherent conflict between said rule of instruction scheduling for each of said at least two

Art Unit: 2124

target machines (page 20, second paragraph; "less damaging" is choosing the rules for the actual machine being targeted verses a machine not currently being targeted).

Claim 6

Aho disclosed the method of claim 1 further including the steps of:

modeling each of said at least two target machines (page 12, "abstract machine"; page 20, target machine info in backend; and page 463, targeting several machines; some model therefore necessary of the several machines in order to target them); and retrieving scheduling information corresponding to each of said at least two target machines (page 463, item number 1.; scheduling information is required for targeting machines).

Claims 8-20

The limitations of claims 8-20 correspond to the limitations of claims 1-6 and as such are rejected in the same manner.

**Claim Rejections - 35 USC § 103**

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2124

4. Claims 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Aho et al.**, "Compilers: Principles, Techniques, and Tools" in view of "UltraSPARC-III: Designing Third-Generation 64-Bit Performance" (herein referred to as **III**) and Sun Microsystems press release of May 1998 (herein referred to as **II**), both in support of prior taken Official Notice as prescribed in MPEP 2144.03.

Claim 7

**Aho** did not explicitly state the method of claim 1 wherein said at least two target machines include an UltraSPARC-II configured to operate at a speed of 360 MHz and an UltraSPARC-III configured to operate at a speed of 600 MHz. Official Notice is taken that it was known at the time of invention to make use of UltraSPARC-II and III processors configured at varying MHz ranges within their capabilities (please note, **II** teaching a UltraSPARC II processor configured to 360 MHz, and **III** teaching a UltraSPARC III processor configured to 600 MHz). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the compiler system of **Aho** with UltraSPARC-II and III processors as known in the prior art. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide a retargeting compiler (cuts down on development time and cost; also **Aho** page 463) for known machine architectures (varying architectures require compiling and optimizing of code).

### ***R s p n s t   A r g u m e n t s***

5. Applicant's arguments filed 20 September 2004 have been fully considered but they are not persuasive. Applicant argued: <sup>1)</sup> **Aho** failed to provide two target machines; <sup>2)</sup> **Aho** failed to provide a hypothetical machine; <sup>3)</sup> prior art failed to disclose UltraSPARC II and III processors. Upon reviewing the arguments, the rejection and the prior art, it is determined Applicant's arguments are not persuasive.

First, **Aho** describes the development of compilers, which are capable of producing executable code for *more than one* machine architecture (note prior references to pages 12, 20 and 463). Second, the compiler development involves creating an internal representation *abstract* machine generic to multiple target machines (note prior references to page 12) and thus a hypothetical machine. Third, the UltraSPARC II and III processors, configured as Applicant claims, is well known in the art (as indicated above). Thus, having addressed Applicant's raised issues, the rejections are maintained.

### ***C o n c l u s i o n***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

Art Unit: 2124

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### ***Correspondence Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Wood whose telephone number is (571)-272-3736. The examiner can normally be reached 9:00am - 5:30pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (571)-272-3719. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9306 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.



William H. Wood  
December 22, 2004



TODD INGBERG  
PRIMARY EXAMINER